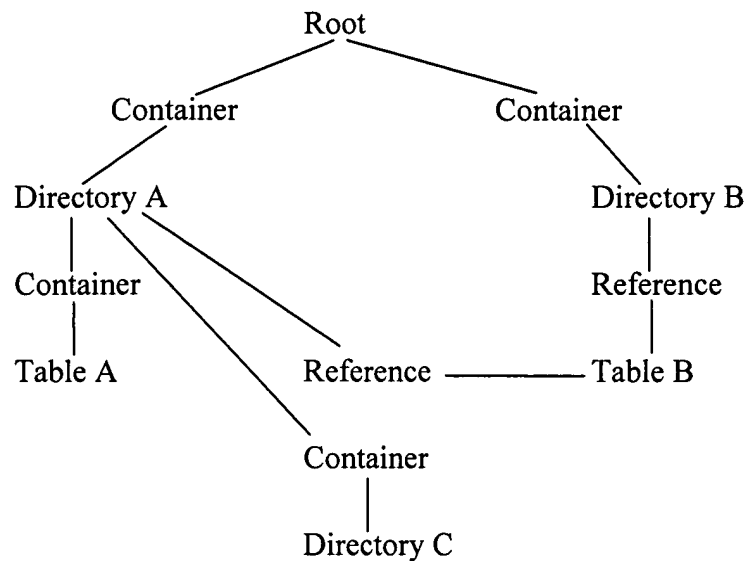## Remarks

Entry of the amendments, reconsideration of the application, as amended, and allowance of all pending claims are respectfully requested. Claims 1-48 remain pending.

With the above amendments, applicants are updating the Cross-Reference to Related Applications, as requested. Please note that further updates were provided in a Preliminary Amendment, dated April 12, 2002, in which serial numbers and filing dates were provided for the related applications, and in a Response to Office Action, dated February 9, 2004, in which status of the second related application was updated to provide Patent Number and issue date. The third listed application has not issued, yet. Based on the forgoing, applicants request withdrawal of the objection to the specification.

In the Office Action, dated January 26, 2005, claims 1-10, 21-23, 34-36 & 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (U.S. Patent No. 6,067,548) in view of Soltis et al. (U.S. Patent No. 6,493,804); claims 11-14, 24-27 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of Soltis and further in view of Shaughnessy (U.S. Patent No. 5,555,388); and claims 15-20, 28-33 an 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of Soltis and further in view of Annevelink (U.S. Patent No. 5,448,727). Applicants respectfully, but most strenuously, traverse these rejections for the reasons below.

In one aspect, applicants' invention is directed to the efficient locking of resources of a global data repository. A locking facility is provided that enables concurrent access to a complex data structure, while minimizing the lock acquisition necessary to access a particular resource of that complex data structure. As one example, the complex data structure is a data repository that includes a plurality of resources (e.g., tables, directories). The repository has a hierarchical topology, and there are various relationships among the resources of the repository and the locks of the repository. As examples, the relationships of the resources may include containment-based relationships and reference-based relationships.

One example of such a repository is depicted in FIG. 4 and reproduced below for the Examiner's convenience.

```
                              Root
              Container                      Container

        Directory A                                Directory B

        Container                                  Reference

        Table A          Reference ———————— Table B

                         Container

                         Directory C
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The type of locking relationship that exists depends on the particular relationship between the resources. For example, if the relationship between the resources is a containment-based relationship, then the locking acquisition is referred to as chained locking. On the other hand, if the relationship is a reference-based relationship, then the locking acquisition is referred to as a reference-based locking strategy.

To minimize the locking needed, the locking strategy selected for a particular resource depends on the relationship between that resource and at least one other resource. For example, if Table A is to be locked, and since Table A has a containment-based relationship, a chained locking acquisition is used. In contrast, if Table B is to be locked, and since Table B has a reference-based relationship, then a reference-based locking strategy is used, as one example.

In one particular embodiment, applicants claim a method of managing the locking of resources of a data repository (e.g., independent claim 1). The method includes, for instance, determining whether a relationship between one resource and another resource of a data repository is a containment-based relationship or whether the relationship is a reference-based relationship, wherein the data repository comprises a hierarchical structure of a plurality of resources, the hierarchical structure comprising one or more resources having a reference-based relationship and one or more resources having a containment-based relationship; and locking at least one resource of the plurality of resources using a locking strategy that depends on whether

the determined relationship is a containment-based relationship or a reference-based relationship. Thus, in one aspect of applicants' claimed invention, a determination is made as to the relationship of a resource, and based on whether that relationship is a containment-based or reference-based relationship, a locking strategy is employed. This is very different from the teachings of the references, either alone or in combination.

For example, while Cheng describes an organizational database and relationship definitions, there is no description, teaching or suggestion in Cheng of locking. Further, there is no description, teaching or suggestion in Cheng of determining whether a relationship between one resource and another resource is a containment-based relationship or a reference-based relationship and then locking a resource based on that determined relationship. This is missing from Cheng, as explicitly admitted in the Office Action (see, e.g., paragraph 1, page 3 of the Office Action). Thus, Soltis is relied upon.

However, Soltis also fails to describe, teach or suggest determining whether a relationship between one resource and another resource of a data repository is a containment-based relationship or whether the relationship is a reference-based relationship and locking a resource using a locking strategy that depends on the determined relationship. Soltis fails to mention different types of relationships and does not differentiate between different types of relationships. There is no discussion in Soltis of whether a relationship is a containment-based relationship or a reference-based relationship. This just is not discussed. Thus, Soltis does not make any determination as to the type of relationship.

Since Soltis fails to teach or suggest determining whether a resource has a containment-based relationship or a reference-based relationship, it follows that Soltis does not teach or suggest locking the resource using a locking strategy that depends on whether the determined relationship is a containment-based relationship or a reference-based relationship. There is no analysis in Soltis of determining the type of relationship of a resource to be locked (i.e., whether it is containment-based or whether it is reference-based), and then selecting the locking strategy based on that determination. This is simply missing from Soltis. Soltis does not even mention containment-based relationships or reference-based relationships, much less make any decisions based on such relationships. Thus, applicants respectfully submit that Soltis does not teach or suggest one or more aspects of applicants' claimed invention.

Since neither Cheng nor Soltis describes, teaches or suggests locking a resource using a locking strategy based on a determination of whether a containment-based relationship or a reference-based relationship exists, the combination also fails to teach or suggest this claimed element.

Support for the rejection is indicated in the Office Action as follows:

> It would have been obvious for one of ordinary skill in the art, at the time the invention was made, to incorporate the concept of locking the resources from Soltis to Cheng ... (page 4 of Office Action).

Applicants respectfully disagree. There is no such teaching or suggestion in the references themselves. Cheng is not even concerned with the locking of resources.

Applicants respectfully submit that to state that Cheng may perform locking based on the determined relationship is hindsight reconstruction of applicants' claimed invention. Cheng is not even concerned with locking. Further, neither Cheng nor Soltis makes any mention of locking a resource using a locking strategy that depends upon whether a determined relationship is a containment-based relationship or a reference-based relationship. This is missing from both references, and therefore, from the combination, as well.

For at least the above reasons, applicants respectfully submit that independent claim 1, as well as independent claims 4 and 7, are patentable over the combination of Cheng and Soltis.

Moreover, the dependent claims are patentable for the same reasons as the independent claims, as well as for their own additional features. Applicants respectfully submit that neither Shaughnessy nor Annevelink overcome the deficiencies of Cheng or Soltis, either alone or in combination. For example, neither Shaughnessy nor Annevelink describes, teaches or suggests applicants' claimed determining whether a relationship between one resource and another resource of a data repository is a containment-based relationship or whether the relationship is a reference-based relationship and then locking a resource based on whether the determined relationship is a containment-based relationship or a reference-based relationship. This is not taught or suggested in Shaughnessy or Annevelink. Since at least this aspect of applicants' claimed invention is missing from all of the references, applicants respectfully request an indication of allowability for all pending claims.

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Should the Examiner wish to discuss this case with applicants' attorney, please contact applicants' attorney at the below listed number.

Respectfully submitted,

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